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Stream Obstructions Rules and Regulations
K.S.A. 82a-301 to 305a
Division of Water Resources
Kansas Department of Agriculture
Effective May 18, 2007

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K.A.R. 5-40-1. Definitions. As used in K.S.A. 82a-301 through 82a-305a and amendments thereto, in the regulations adopted pursuant to these statutes, and by the chief engineer in administering K.S.A. 82a-301 through 82a-305a and amendments thereto, the following terms shall have the meanings ascribed to them in this regulation, unless the context clearly requires otherwise:

(a) "Application" means the formal document and any required supporting information that are submitted to the chief engineer and request a permit, pursuant to K.S.A. 82a-301 through 82a-305a, and amendments thereto.

(b) "Appurtenant works" means the primary spillway and other conduits through a dam, the valves, the auxiliary spillway, the service spillway, the stilling basin, any constructed outlet channel, all dikes and berms designed and constructed to protect the dam, the drains, and all other features constructed to protect or operate a dam.

(c) "As-built drawings" means the drawings showing a permitted project and all appurtenant works as the project and works were actually built. This term shall include the following:

(1) All deviations from the plans that were approved by the chief engineer;

(2) the location and design of any instruments and monitoring equipment that were installed at the site;

(3) the location and elevation of any benchmarks; and

(4) a certification that the permitted project was constructed as shown on the as-built drawings.

(d) "Authorized representative" means any employee of the chief engineer designated by the chief engineer to perform duties and functions on behalf of the chief engineer.

(e) "Auxiliary spillway" means an open channel that is constructed over or around an embankment for the purpose of conveying safely past the dam the flows that are greater than the primary spillway design discharge and that can be stored in the detention storage. This term is also known as an emergency spillway.

(f) "Benchmark" means a reference point or object of known elevation and location that is not expected to move horizontally or vertically during the life of the project.

(g) "Borrow area" means land, usually located near the dam, from which earth used to construct the embankment will be excavated.

(h) “Breach analysis” means an engineering analysis to determine the areas that would be inundated if a dam failed.

(i) "Channel change" means any project that alters the course, current, or cross section of any stream.

(j) "Chief engineer" means the chief engineer, division of water resources of the Kansas department of agriculture.

(k) “Control section” means the immediate downstream end of the level section of an open-channel earthen spillway. The elevation of the control section is the elevation of the open-channel spillway crest.

(l) “Cutoff collar” means a projecting flange built or installed completely around the outside of a pipe to lengthen the path of seepage along the outer surface of the pipe.

(m) “Cutoff trench” means an excavation under a dam to be later filled with impervious material to prevent or reduce the seepage of water through the foundation of a dam.

(n) “Design discharge” means the maximum rate of flow, expressed in cubic feet per second, released from a dam’s spillways for the design storm.

(o) “Design storm” means the precipitation event specified in K.A.R. 5-40-22 that is the minimum precipitation event required to be used to design a particular dam.

(p) “Detention storage” means the volume in the reservoir between the lowest uncontrolled spillway, not including any low-flow augmentation works, and the crest of the auxiliary spillway.

(q) “Detention storm” means the storm described in K.A.R. 5-40-23.

(r) “Easily erodible soils” means soils with a high content of fine sand or silt and with little or no cohesion or plasticity, including fine sand, silt, sandy loam, and silty loam.

(s) “Effective height” means the difference in elevation between the crest of an auxiliary spillway or service spillway and the lowest point of the downstream toe of a dam. If the dam does not have an auxiliary or service spillway, the effective height means the difference in elevation between the top of the dam and the lowest point of the downstream toe of the dam.

(t) “Effective storage” means the volume of storage space in a reservoir below the crest of the auxiliary spillway or service spillway and above the elevation of the

downstream toe of the dam at its lowest point. Effective storage shall not be reduced by accounting for accumulated sediment.

(u) "Embankment" means the earthen-fill portion of the dam.

(v) "Emergency action plan" means a formal document that identifies potential emergency conditions at a dam and specifies preplanned actions to be followed to minimize property damage and loss of life if the dam fails.

(w) "Erosion-resistant soils" means cohesive soils with a high clay content and high plasticity, including silty clay, sandy clay, and clay.

(x) "Freeboard" means the vertical distance between the maximum water surface elevation attained during the design storm and the top of the dam.

(y) "General plan" means a plan adopted by a watershed district, drainage district, or similar entity required by statute to be approved by the chief engineer, including any of the plans formulated under K.S.A. 24-901 and K.S.A. 24-1213, and amendments thereto.

(z) "Hazard" means the property or people that could be damaged or endangered by the failure of a dam, including people or property that might be inundated. This term shall include a public or industrial water supply stored in the reservoir created by the dam that would be released if the dam failed.

(aa) "High-impact dams" means all of the following classes of dams:

(1) Size class 4, hazard class A dams;

(2) size classes 3 and 4, hazard class B dams; and

(3) all hazard class C dams, using the definitions of hazard class and size class in K.A.R. 5-40-20 and K.A.R. 5-40-21.

(bb) "Hydraulically most distant point in the watershed" means the point in a watershed from which a raindrop falling at that point takes the longest time to reach the dam.

(cc) "Impervious material" means material that allows a relatively low rate of water movement through its cross section.

(dd) "Inspection year" means the period on and after May 1 of one year through April 30 of the following year. The inspection year shall be named for the calendar year in which the inspection year ends.

(ee) "Inundation area" means the area below a dam that will be inundated with water as determined by conducting a breach analysis meeting the requirements specified in K.A.R. 5-40-24.

(ff) “Invert” means the lowest point on the inside of the outlet of a conduit.

(gg) “Low-flow augmentation works” means any uncontrolled conduit, orifice, or other appurtenant works that slowly release water from storage in a reservoir, or bypass low flow through a reservoir.

(hh) “Low-impact dams” means all of the following classes of dams:

(1) Size classes 1, 2, and 3, hazard class A dams; and

(2) size classes 1 and 2, hazard class B dams, using the definitions of hazard class and size class in K.A.R. 5-40-20 and K.A.R. 5-40-21.

(ii) “Maintenance” means the actions or upkeep performed on a dam or its appurtenances to compensate for wear and tear on the dam and appurtenances and to preserve the dam and appurtenances so that the dam and appurtenances function properly until they are removed, including woody vegetation control; grass seeding; burrowing animal control; repair of minor erosion, cracks, animal burrows, and minor settling; care of pipes, piezometers, drains, valves, gates, and other mechanical devices; replenishment of riprap; and removal of debris from spillways.

(jj) “Modification” means any change in a dam or its appurtenances that involves a change to or significant disturbance of the embankment, an alteration of the flow characteristics of a spillway, a change in the storage capacity or freeboard, or any other significant alteration in the functioning of the dam.

(kk) "Navigable stream" means any of the following:

(1) The Arkansas river;

(2) the Missouri river; or

(3) the Kansas river.

(ll) “One percent-chance storm” means a rainfall event that has a one percent chance of being equaled or exceeded one or more times in a year.

(mm) “Owner of a dam” means the owner or owners of the land upon which a dam and appurtenant works are constructed unless an easement authorizes another person or entity to construct and maintain a dam on that easement. With such an easement, the holder of the easement shall be considered to be the owner of the dam.

(nn) "Perennial stream" means a stream, or part of a stream, that flows continuously during all of the calendar year, except during an extreme drought.

(oo) “Permanent pool” means the storage space in a reservoir below the elevation of the lowest uncontrolled spillway, not including any low-flow augmentation works. This term is also known as the “normal pool.”

(pp) "Permit" means the consent or other formal document issued by the chief engineer that authorizes the construction, repair, or modification of a dam, channel change, or stream obstruction, and its operation and maintenance.

(qq) "PMP" means the probable maximum precipitation that can occur in a precipitation event as prescribed by K.A.R. 5-40-31.

(rr) "Prejurisdictional dam" means any of the following:

(1) A dam constructed before May 28, 1929;

(2) a dam constructed by an agency or political subdivision of state government, other than a county, city, town, or township, before April 11, 1978; or

(3) a dam constructed before July 1, 2002 that is 25 or more feet in height and impounds less than 30 acre-feet of water at the top of the dam.

(ss) "Primary spillway" means the uncontrolled outlet device through a dam that provides the initial outlet for storm flows, usually consisting of either of the following:

(1) A riser structure in combination with an outlet conduit; or

(2) a canopy or hooded inlet structure in combination with an outlet conduit.

This term is also known as a "principal spillway."

(tt) "Rainfall excess" means that part of the rain in a given storm that falls at intensities exceeding the infiltration capacity of the land and that is the volume of the rain available for direct runoff.

(uu) "Reservoir" means the area upstream from a dam that contains, or can contain, impounded water.

(vv) "Repair" means any action, other than maintenance, taken to restore a dam and its appurtenant works to their original permitted condition.

(ww) "Service spillway" means an open-channel spillway constructed over or around a dam embankment to convey safely past the dam all flows entering the reservoir that cannot be stored in the reservoir behind a dam that does not have a primary spillway.

(xx) "Size factor" means the effective height of the dam, expressed in feet, multiplied by the effective storage of the reservoir, expressed in acre-feet.

(yy) "Stilling basin" means an open structure or excavation at the outlet of a spillway that dissipates the energy of fast-moving water being discharged from the spillway to protect the streambed below a dam from erosion.

(zz) "Stream" means any watercourse that has a well-defined bed and well-defined banks and that has a watershed above the point marking the site of the project that exceeds the following number of acres in the zones specified:

(1) Zone three: 640 acres for all geographic points within any county west of a line formed by the adjoining eastern boundaries of Phillips, Rooks, Ellis, Rush, Pawnee, Edwards, Kiowa, and Comanche counties;

(2) Zone two: 320 acres for all geographic points within any county located east of zone three and west of a line formed by the adjoining eastern boundaries of Republic, Cloud, Ottawa, Saline, McPherson, Reno, Kingman, and Harper counties; and

(3) Zone one: 240 acres for all geographic points within any county located east of zone two.

The flow of a stream is not necessarily continuous and can occur only briefly after a rain in the watershed. If the site of the project has been altered so that a determination of whether the well-defined bed and banks did exist is not possible, it shall be presumed that the bed and banks did exist if the watershed acreage criteria specified in this subsection have been met, unless the owner of the project conclusively demonstrates that the well-defined bed and banks did not exist when the project site was in its natural state and had not been altered by human activity.

(aaa) "Stream obstruction" means any project or structure that is wholly or partially placed or constructed in a stream and that does not meet the definition of a dam in K.S.A. 82a-301 and amendments thereto.

(bbb) "Time of concentration" means the time required for runoff to flow from the hydraulically most distant point in the watershed to the watershed outlet once the soil has become saturated and minor depressions have been filled.

(ccc) "Trash rack" means a protective device installed on the inlet of a primary spillway to prevent trash and other debris from obstructing the primary spillway without obstructing the flow of water.

(ddd) "Watershed" means all of the area draining toward a selected point on a stream.

(eee) "Wing dike" means an earthen or rock structure below the toe of a dam that is constructed to protect the embankment from erosion.

(fff) "Zone," in an earthen dam, means a segment of earthen fill containing similar materials.

(ggg) "Zoned fill" means an embankment divided into two or more zones to make the best use of available materials. (Authorized by and implementing K.S.A. 2006 Supp. 82a-303a; effective May 1, 1983; amended May 1, 1987; amended, T-5-12-30-91, Dec. 30, 1991; amended Feb. 17, 1992; amended Sept. 22, 2000; amended May 18, 2007.)

K.A.R. 5-40-4. Preparer of maps, plans, profiles, reports, and specifications. In addition to the requirements of the Kansas state board of technical professions, the requirements in this regulation shall apply.

(a) Each map, plan, profile, report, and specification submitted to the chief engineer for approval shall be prepared by, or under the supervision of, a person who is competent in the design and construction of channel changes~~,~~ or stream obstructions, as appropriate.

(b) Maps, plans, profiles, reports, and specifications for any dam shall be prepared by, or under the supervision of, a licensed professional engineer who is competent in the design and construction of dams

(c) Maps, plans, profiles, reports, and specifications for any channel change or stream obstruction project on a navigable stream or a stream having a mean annual flow of 100 cubic feet per second or more at the proposed location of the project shall be prepared by a licensed professional engineer who is competent in the design of that type of project.

(d) No provision of this regulation, and no decision made by the chief engineer pursuant to this regulation, shall alter the responsibilities or duties of any licensee of the Kansas state board of technical professions to comply with that board's requirements. (Authorized by K.S.A. 2006 Supp. 82a-303a; implementing K.S.A. 2006 Supp. 82a-302 and 82a-303a; effective May 1, 1983; amended May 1, 1986; amended May 1, 1987; amended Sept. 22, 2000; amended May 18, 2007.)

K.A.R 5-40-6. Waiver and stricter requirements.

(a) The chief engineer may waive any of the regulations adopted under articles 40, 41, 42 and 43 if it is shown to the satisfaction of the chief engineer that the waiver of the regulation will not pose a hazard to the public safety and that the waiver is in the public interest.

(b) The chief engineer may also invoke any jurisdiction granted by statute and impose stricter requirements than required by rules and regulations where such jurisdiction or additional requirements are necessary to protect the public interest, protect the public safety or prevent damage to property. (Authorized by K.S.A. 82a-303a; implementing K.S.A. 82a-303; effective May 1, 1983; amended May 1, 1987.)

K.A.R 5-40-7. Other maps, plans, profiles, data and specifications. The applicant shall also submit any other maps, plans, profiles and specifications of the dam, channel change or obstruction and any other data which the chief engineer may require. (Authorized by K.S.A. 82a-303a; implementing K.S.A. 82a-302; effective May 1, 1983; amended May 1, 1987.)

K.A.R. 5-40-8. Acceptable application.

(a) To be acceptable for filing, each application for a permit to construct, modify, or repair a dam, other stream obstruction, or channel change shall be accompanied by the statutorily required filing fee and shall contain all of the following:

(1) One copy of the completed application on a form prescribed by the chief engineer and signed by the applicant;

(2) two copies of the maps, plans, specifications, and profiles for a proposed or existing dam that meet the requirements of these regulations or one copy of the maps, plans, specifications, and profiles for any other stream obstruction or channel change that meet the requirements of these regulations; and

(3) for a proposed or existing dam, one copy of the design report that meets the requirements of these regulations.

(b) If the applicant fails to meet the requirements of subsection (a), the applicant shall be notified by the chief engineer of the deficiencies in writing and given 60 days from the time the notice is postmarked to submit the required items. If the required items are not submitted within 30 days after the chief engineer's notice is postmarked, a reminder letter shall be sent to applicant again requesting the required items.

(c) Any applicant may submit a request for an extension of time to provide a complete application. The applicant shall submit the request for extension of time before the deadline to submit the items. The request shall also include a justification for the extension of time and an estimate of the time needed to submit the required items.

(d) If the required items are not submitted within 60 days after the chief engineer's notification of deficiency, or within any authorized extension of time, the application shall be dismissed and the application fee forfeited.

(e) If the dismissed application was for the construction, repair, or modification of an existing illegal, unpermitted dam, the removal of the dam shall be ordered by the chief engineer.

(f) If an application is dismissed pursuant to this regulation, within 30 days of the date of dismissal the applicant may apply to have the application reinstated. The application may be reinstated by the chief engineer for good cause shown by the applicant. (Authorized by K.S.A. 2006 Supp. 82a-303a; implementing K.S.A. 2006 Supp. 82a-301, 82a-302, and 82a-303a and K.S.A. 82a-303c; effective May 1, 1983; amended May 18, 2007.)

K.A.R. 5-40-100. Request to be included on the list of independent engineers qualified to review applications.

(a) Each licensed professional engineer who desires to be placed on the list of licensed professional engineers approved to review applications for the permit required by K.S.A. 82a-301 et seq., and amendments thereto, shall submit a request to the chief engineer on a form prescribed by the chief engineer.

(b) Any engineer may request approval in one or more of the following areas:

(1) Dam design;

(2) channel design; and

(3) the design of stream obstructions other than dams.

(c) A team of persons may be qualified to be a reviewer for a project. The qualifications of each team member shall be submitted, and one person shall be designated as the supervising reviewer. The supervising reviewer shall meet the minimum requirements for an individual reviewer. The other members of the review team shall not be required to meet the minimum requirements for an individual reviewer. (Authorized by K.S.A. 2006 Supp. 82a-303a; implementing K.S.A. 2006 Supp. 82a-302 and 82a-303a; effective May 18, 2007.)

K.A.R. 5-40-101. Information to be submitted with a request to be a reviewer.

(a) Each engineer who wants to be included on the list of licensed professional engineers approved to review applications under the obstructions in streams act, as authorized by K.S.A. 82a-302, and amendments thereto, shall submit that request on a form prescribed by the chief engineer and shall designate each area of review for which the engineer or a team of engineers desires to be approved.

(b) All of the following information shall be included on each request for each area in which the engineer seeks to be approved:

(1) The type and license number of each current license from the Kansas state board of technical professions;

(2) relevant education, including graduate and postgraduate schools attended, degrees received, and professional development work; and

(3) work experience in the requested area of expertise, including the following:

(A) The number of years of experience as an engineering intern;

(B) the number of years of experience as an engineer; and

(C) the approximate number of projects for which the engineer met the following criteria:

(i) Was responsible for the project;

(ii) performed substantive design tasks;

(iii) had quality assurance, quality control, or project review responsibilities; and

(iv) performed construction supervision or inspection; and

(D) the project name, the location, a brief description of the project, and a brief description of the engineer's responsibilities for one or two projects for which the engineer met the following criteria:

(i) Had responsible charge or performed significant portions of the design; or

(ii) provided quality control, quality assurance, project review, construction supervision, or construction inspection duties. (Authorized by K.S.A. 2006 Supp. 82a-303a; implementing K.S.A. 2006 Supp. 82a-302 and 82a-303a; effective May 18, 2007.)

K.A.R. 5-40-102. Minimum requirements to be an individual reviewer. To be an individual reviewer, each person shall meet both of the following qualifications:

(a) Have a current professional engineer's license from the Kansas state board of technical professions; and

(b) have a minimum of five years of relevant work experience in the area for which approval is sought. (Authorized by K.S.A. 2006 Supp. 82a-303a; implementing K.S.A. 2006 Supp. 82a-302 and 82a-303a; effective May 18, 2007.)

K.A.R. 5-40-103. Conflict of interest. A reviewer shall not be eligible to review any of the following:

(a) Any project in which the reviewer has participated in the project's design in any way;

(b) any project designed by any other employee of the reviewer's current employer; or

(c) any other project for which the reviewer has a conflict of interest with the owner of the dam, the designer of the dam, or the state of Kansas. (Authorized by K.S.A. 2006 Supp. 82a-303a; implementing K.S.A. 2006 Supp. 82a-302 and 82a-303a; effective May 18, 2007.)

K.A.R. 5-40-104. Notification of approval or disapproval to be a reviewer. Within 60 days of the receipt in the office of the chief engineer of a completed request pursuant to K.A.R. 5-40-101, the requester shall be notified by the chief engineer of whether that individual has been approved in each requested area. If the chief engineer has not approved the request for each area of review requested, the requester shall be notified by the chief engineer of the reason or reasons that each request has been denied. (Authorized by K.S.A. 2006 Supp. 82a-303a; implementing K.S.A. 2006 Supp. 82a-302 and 82a-303a; effective May 18, 2007.)

K.A.R. 5-40-105. Procedure for independent review of an application to construct a dam or other water obstruction.

(a) When an applicant provides a copy of that individual's application to an approved reviewer pursuant to K.S.A. 82a-302 and amendments thereto, the applicant shall also submit the following to the chief engineer:

(1) The original application;

(2) all documentation required for an acceptable application as specified in K.A.R. 5-40-8;

(3) the statutorily required filing fee; and

(4) the name, address, and telephone number of the reviewer.

(b) The review required by the water projects environmental coordination act, K.S.A. 82a-325 et seq. and amendments thereto, shall be initiated by the chief engineer after the chief engineer receives the application.

(c) Within 37 days after the review specified in subsection (b) is initiated by the chief engineer, any comments received from the environmental review agencies shall be sent by the chief engineer to the reviewer. (Authorized by K.S.A. 2006 Supp. 82a-303a; implementing K.S.A. 2006 Supp. 82a-302 and 82a-303a; effective May 18, 2007.)

K.A.R. 5-40-106. Report of findings of independent reviewer.

(a) When a reviewer completes the review of an application pursuant to K.S.A. 82a-302 and amendments thereto, the reviewer shall submit a report of that review to the chief engineer. The report shall be properly sealed by the reviewing engineer as directed by the Kansas state board of technical professions.

(b) Each complete report shall include the following:

(1) An opinion as to whether the application meets the requirements of K.S.A. 82a-301 et seq., and amendments thereto, the regulations that implement these statutes, sound engineering principles, and commonly accepted engineering practices;

(2) the basis for that opinion, including any analyses that were performed, and the supporting data;

(3) an evaluation of the comments from the environmental review agencies that were furnished to the reviewer by the chief engineer and a recommendation about how to address all adverse comments;

(4) a recommendation about whether any request by the applicant to waive one or more regulations should be approved and the basis for approving or denying the waiver; and

(5) a recommendation about whether the chief engineer should approve or deny the permit and any conditions that the chief engineer should impose on the permit.

(c) The recommendations shall not be binding on the chief engineer. The chief engineer shall maintain the final authority to approve or deny all applications. (Authorized by K.S.A. 2006 Supp. 82a-303a; implementing K.S.A. 2006 Supp. 82a-302 and 82a-303a; effective May 18, 2007.)

K.A.R. 5-41-1. Channel changes; plans and specifications. Plans for a channel change shall include the following:

(a) A general location map or aerial photograph, showing the present alignment of the stream, location of the proposed channel change, section lines, property lines with names and addresses of adjoining landowners, drainage area, a north arrow, a bar scale, and any other prominent features;

(b) a detailed plan view of the project with stationing shown, including as many other views as necessary to fully describe the project;

(c) a profile drawing along the centerline of the proposed new channel. This profile shall extend five times the channel width upstream and an equivalent distance downstream from each end of the new channel. The stationing shown on the plan view

shall correspond to stationing on the profile drawing. This drawing shall show the present ground surface, the present stream bed, and the grade line of the proposed new channel;

(d) cross sections of the existing stream at locations immediately above and below the proposed channel change. The location of these cross sections shall be described and shown on the plans. The elevations of the top of the existing banks and bottom of the channel shall be shown;

(e) at least one permanent bench mark conveniently located for use after construction, except for grassed waterways constructed for the purpose of conveying runoff without causing erosion or flooding. The location, description, and elevation of the permanent bench mark, to which all elevations are referred, shall be shown on the plans. The designer shall reference the project bench mark to the current national geodetic vertical datum, to a tolerance of plus or minus ½ foot on all channel changes involving perennial streams and where detailed floodplain data are available. Project datum shall be acceptable on all other channel changes; and

(f) a cross-sectional drawing of the proposed new channel, including dimensions. (Authorized by K.S.A. 82a-303a; implementing K.S.A. 82a-302; effective May 1, 1987; amended Sept. 22, 2000.)

5-41-2. Channel changes; water velocity. The new channel shall have a conveyance capacity equal to or greater than the old channel. The water velocity after the completion of the proposed channel change or stream obstruction shall not exceed a permissive velocity. (Authorized by K.S.A. 82a-303a; implementing K.S.A. 82a-303; effective May 1, 1987.)

5-41-3. Channel changes; side slopes. The side slopes of the proposed new channel shall not be steeper than one foot vertical to two feet horizontal unless the applicant submits data and analysis to show that a steeper slope will be stable. (Authorized by K.S.A. 82a-303a; implementing K.S.A. 82a-303; effective May 1, 1987.)

5-41-4. Channel changes; construction by erosion. New channels shall not be constructed by erosion. (Authorized by K.S.A. 82a-303a; implementing K.S.A. 82a-303; effective May 1, 1987.)

5-41-5. Channel changes; disposal of excavated material.

(a) Material removed from the newly excavated channel shall be deposited at a location and in a form acceptable to the chief engineer. If the material is to be deposited so that it will have the effect of a levee, a separate prior written approval of the chief engineer is required pursuant to K.S.A. 24-126.

(b) Filling or plugging the original channel shall receive the prior written approval of the chief engineer. (Authorized by K.S.A. 82a-303a; implementing K.S.A. 82a-303; effective May 1, 1987.)

K.A.R. 5-41-6. Channel changes; vegetative strips on new channels. On each new channel project, except a grassed waterway constructed for the purpose of conveying runoff without causing erosion or flooding, a vegetative strip shall be established and maintained for a width of 50 feet immediately adjoining the channel on each side of the stream if site conditions permit, or unless an acceptable engineering design shows that a greater or lesser width of vegetative strip is preferable. The general type of vegetation shall be approved by the chief engineer. (Authorized by K.S.A. 82a-303a; implementing K.S.A. 82a-303; effective May 1, 1987; amended Sept. 22, 2000.)

K.A.R. 5-42-1. Stream obstructions; plans and specifications.

(a) The plans required for a permit for a stream obstruction pursuant to K.S.A. 82a-301, and amendments thereto, shall include the following:

(1) A general location map or aerial photograph showing the stream, location of the proposed obstruction, sufficient detail to locate the proposed construction site, section lines, a bar scale, a north arrow, property lines with the names and addresses of adjoining landowners~~,~~ and any other landowners whose land may be hydraulically affected by the proposed stream obstruction, drainage area, and any other prominent features;

(2) a detailed plan view fully describing the obstruction and the site;

(3) the following topographical information, which shall be provided from streambed elevation to the limits specified in subsection (b):

(A) A profile of the streambed and both banks;

(B) a contour map with a contour interval of no more than two feet; or

(C) cross sections perpendicular to the stream and at intervals of no more than five times the width of the channel;

(4) an elevation view showing the obstruction on a cross section of the stream and the valley up to the post project design flood elevation at the site;

(5) at least one permanent benchmark shall be conveniently located for use after construction. The location, description, and elevation of the permanent benchmark~~,~~ to which all elevations are referred~~,~~ shall be shown on the plans. Reference to the national geodetic vertical datum of 1988, or other acceptable national vertical datum, to a tolerance of plus or minus one-half foot shall be required for all stream obstructions on perennial streams and all other streams where base flood elevations have been determined and are shown on flood insurance rate maps. An assumed project datum shall be acceptable on all other stream obstruction projects;

(6) details of the manner in which the obstruction is to be tied into the bed and banks of the streams;

(7) the land for which easements or rights-of-way are to be acquired if the proposed obstruction affects land other than that owned by the applicant; and

(8) unless it is clear that the impact of the proposed project will be contained within the channel or limited to property under the control of the applicant, a hydraulic analysis determining the preproject and postproject water surface elevations for the 50

percent-chance flood and the one percent-chance flood shall be prepared and submitted to the chief engineer.

(b)(1) If it is clear that the impact of the proposed stream obstruction will be contained within the channel or limited to property under the control of the applicant, the topographical information upstream of the stream obstruction required in paragraph (a)(3) shall be required to either of the following, whichever is lower:

(A) The elevation of the highest point on the proposed obstruction; or

(B) the elevation of the one percent-chance flood water surface.

The applicant shall not be required to show topographical information for any property not under the control of the applicant.

(2) If it is not clear that the impact of the proposed project will be contained within the channel or limited to property under the control of the applicant, the topographical information upstream of the stream obstruction required in paragraph (a)(3) shall be provided from streambed elevation up to the elevation of the one percent-chance flood water surface upstream of the stream obstruction.

(3) The topographical information required in paragraph (a)(3) and subsection (b) shall be provided downstream of each proposed stream obstruction for a distance equal to five times the width of the channel at the proposed site of the stream obstruction or 50 feet downstream from the toe of the stream obstruction, whichever is greater.

(c) Each application for a permit to construct a stream obstruction shall include the following specifications:

(1) Each major element in the construction of the obstruction;

(2) the minimum quality of workmanship that is acceptable to construct the obstruction;

(3) the minimum quality of materials that is acceptable to construct the obstruction; and

(4) the materials proposed to be used to construct the obstruction.

(d) The specifications shall meet the following requirements:

(1) Be clear, legible, and shown in sufficient detail to assure that the work can be properly constructed; and

(2) be shown on the plans, in the design report, or on a separate document.

(e) If the Kansas department of transportation (KDOT) standard construction specifications meet all of the requirements of this regulation and are to be enforced during construction, referencing those specifications on the plans shall be sufficient to comply with this regulation.

(f) If the standard construction specifications of a city or county in Kansas meet the following requirements, then referencing those specifications on the plans shall be sufficient to comply with this regulation:

(1) Meet all the requirements of this regulation;

(2) are to be enforced during construction; and

(3)(A) Have been provided to the chief engineer; or

(B) are readily available at no cost from the city or county that utilizes the specifications. (Authorized by K.S.A. 2006 Supp. 82a-303a; implementing K.S.A. 2006 Supp. 82a-301, 82a-302, and 82a-303a; effective May 1, 1987; amended, T-5-12-30-91, Dec. 30, 1991; amended April 27, 1992; amended May 18, 2007.)

5-42-2. Stream obstruction; minor. If a proposed stream obstruction will not decrease the cross sectional area of a stream channel at the location of the obstruction by more than 15 percent, the plans required by the chief engineer shall be equivalent to the type submitted to the United States corps of engineers with applications for a department of the army permit. Such obstructions shall include weirs, causeways, low-water crossings, low-head dams, intake structures, boat launching ramps, pipeline crossings, outfall structures, marinas, boat docks, jetties and revetments. (Authorized by K.S.A. 82a-303a; implementing K.S.A. 82a-303; effective May 1, 1987.)

K.A.R. 5-42-3. (Authorized by K.S.A. 82a-303a; implementing K.S.A. 82a-303; effective May 1, 1987; amended April 27, 1992; revoked Sept. 22, 2000.)

K.A.R. 5-42-4. Stream obstruction; temporary structure. A temporary structure shall not require a stream obstruction permit from the chief engineer pursuant to K.S.A. 82a-301 et seq. and amendments thereto if it meets all of the following criteria:

(a) The structure is temporary in nature.

(b) The structure is constructed only of temporary materials, including local streambed materials, straw or hay bales, plastic, or plywood, that are likely to wash out during a bank-full storm event.

(c) The structure is actively maintained only during the duration of the temporary beneficial use.

(d) The structure is less than two feet in height above the natural bed of the stream, and alterations to the stream and alterations to the stream bank are no more than are necessary for permitting access to the site for operation and maintenance.

(e) The structure is below the natural low bank of the stream.

(f) Any water backed up by the structure is detained solely on property under the control of the landowner that constructed the temporary structure.

(g) The structure does not materially adversely affect the public interest, public safety, or environment. (Authorized by K.S.A. 82a-303a; implementing K.S.A. 82a-303; effective Sept. 22, 2000.)

K.A.R. 5-42-5. Determining the peak discharge of a one percent-chance storm. In determining the flow magnitude of a design storm, the applicant shall use one of the following methods.

(a) For drainage areas of less than 640 acres, use of the rational formula shall be acceptable.

The rational formula is Q = CIA

Where C = the runoff coefficient

I = the intensity of rainfall, in inches per hour

A = the drainage area, in acres.

(b) For any drainage area, the flow magnitude of a design storm may be determined by using one of the methods in the following:

(1) "Estimation of peak streamflows for unregulated rural streams in Kansas," water-resources investigations report 00-4079, published by the United States geological survey in 2000, which is hereby adopted by reference;

(2) "urban hydrology for small watersheds," technical release 55, published by the natural resources conservation service and dated June 1986, which is hereby adopted by reference; and

(3) "computer program for project formulation," technical release 20, published by the natural resources conservation service, United States department of agriculture, and dated October 2004, which is hereby adopted by reference.

(c) For streams for which sufficient stream gaging data is available, the applicant may use sound engineering principles and commonly accepted engineering practices to estimate the peak one percent-chance discharge from the gage record.

(d) A method other than the methods specified in subsections (a), (b), and (c) may be used to determine the one percent-chance storm discharge if the method meets both of the following criteria:

(1) The method is based on sound engineering principles and commonly accepted engineering practices.

(2) The method has been previously approved, in writing, by the chief engineer.

(Authorized by and implementing K.S.A. 2006 Supp. 82a-303a; effective May 18, 2007.)

5-43-1. Sand dredging operation; plans and specifications. Plans for a sand dredging operation from a stream shall include:

(a) A general location map or aerial photograph showing the stream, location of the proposed sand dredging operation, section lines, property lines with names and addresses of adjoining landowners, local access roads, a bar scale, a north arrow and any other prominent features;

(b) a plat of the area within which the sand plant will be operated, prepared to a scale of 200 feet per inch, or less, if necessary to show in detail the features of the stream at the location. The plat shall include at least one permanent bench mark. The survey shall also include at least two permanent horizontal control points on a baseline running generally parallel to the stream. These permanent points shall be identified with substantial markers and shall be easily visible in the field. The plat shall show the location of the natural banks on both sides of the stream, all islands, sand bars, and the direction of the stream within the channel. Where county commissioners have established bank lines along a stream in accordance with the provisions of K.S.A. 82a-307a, the location of such established bank lines shall be shown. The plat shall also show the proposed location of the tipple, boundaries of areas from which material will be removed and the area to which rejected material will be returned;

(c) cross sections of the channel, measured along lines at right angles to the general direction of the stream and plotted to a horizontal scale of not more than 200 feet per inch and an appropriate vertical scale. Typical cross sections shall be shown for unobstructed portions of the channel as well as for portions in which islands, sand bars or other obstructions may be located. The elevation of the top of both banks, the bed of the stream, and the surface of islands and bars shall be shown on the cross sections. The location of lines along which cross sections are measured shall be referred to the baseline and indicated on the plat. All elevations shall be referred to a permanent bench mark, which is referenced to the national geodetic vertical datum of 1929 to a tolerance of plus or minus one half foot; and

(d) a statement of plan of operation. A brief paragraph shall be included explaining the plants usual operating plans. The kind of equipment, pumping capacities, seasonal limitations and any other operational constrictions shall be included. (Authorized by K.S.A. 82a-303a; implementing K.S.A. 82a-302; effective May 1, 1987.)

5-43-2. Sand dredging; buffer zone. There shall be a buffer zone of not less than 500 feet between dredging operations, and between dredging operations and all bridges. There shall be a buffer zone of 300 feet between dredging operations and buried pipeline or cable crossings. There shall be a buffer zone of 200 feet between dredging operations and levees, or other features subject to damage by undercutting. (Authorized by K.S.A. 82a-303a; implementing K.S.A. 82a-303; effective May 1, 1987.)

5-43-3. Sand dredging; operation. In counties at locations where bank lines have been established on designated streams pursuant to K.S.A. 82a-307, materials shall be removed only between established bank lines. The chief engineer, for good cause, may allow excavation or removal of material landward from established bank lines if approval is also obtained from the board of county commissioners. On navigable streams materials shall be removed only from the channel and in such a manner so as not to degrade the banks. On all other streams, materials shall be removed only from areas and in a manner approved by the chief engineer. (Authorized by K.S.A. 82a-303a; implementing K.S.A. 82a-303; effective May 1, 1987.)

5-43-4. Sand dredging; operations conflicting. If more than one operator proposes to operate within a given reach of a private stream, then all conflicting applicants shall be required to submit proof of easements or other legal authority to operate. If more than one operator proposes to operate within a given reach of a navigable stream, the chief engineer shall determine which operators shall be permitted, based on the following criteria:

(a) The capability of the applicant's equipment to operate within the desired area;

(b) the applicant's need for the material;

(c) the applicant's existing operation, if any;

(d) the anticipated date the applicant will begin operation;

(e) the applicant's history of operation;

(f) the anticipated plant completion date;

(g) proof of the applicant's easements and right-of-ways necessary to operate;

(h) date of application; and

(i) any other relevant factor. (Authorized by K.S.A. 82a-303a; implementing K.S.A. 82a-302; effective May 1, 1987.)

5-43-5. Sand dredging; operation setback. Sand dredging operations located outside the channel of a stream shall be set back a minimum of 50 feet from the bank of the channel. There shall be a minimum slope on the sand plant side of not greater than one foot vertical to four feet horizontal. (Authorized by K.S.A. 82a-303a; implementing K.S.A. 82a-303; effective May 1, 1987.)

K.A.R. 5-46-1. General permits; bridge and culvert replacement projects.

(a) Except as provided in subsection (e), the construction of any bridge or culvert replacement project with a watershed of 2,560 or more acres in zone one, 3,840 or more acres in zone two, and 5,120 or more acres in zone three shall meet the criteria in subsection (c) of this regulation. Before construction, the applicant shall apply for and obtain a general permit from the chief engineer. The application shall be filed on a form prescribed by the chief engineer and shall be accompanied by plans or sketches meeting the requirements of K.A.R. 5-42-2.

(b) Except as provided in subsection (e), the construction of any bridge or culvert replacement project with a watershed of fewer than 2,560 acres in zone one, 3,840 acres in zone two, and 5,120 acres in zone three shall meet the criteria in subsection (c) of this regulation. Before construction, the applicant shall properly complete an application for,

and receive the consent of, the chief engineer. The application shall be filed on a form prescribed by the chief engineer.

(c) Each bridge replacement and culvert replacement project shall meet all of the following criteria:

(1) The project shall not be a change either in alignment or in the cross section of a stream of more than 200 feet in length on minor streams, and not more than 400 feet in length on moderate or major streams as measured along the original channel. A minor stream is defined as a stream or watercourse that has a mean annual flow of less than five cubic feet per second (cfs). The major streams are the Kansas River, the Arkansas River, and the Missouri River. A moderate stream is defined as a stream or watercourse with a mean annual flow equal to or greater than five cfs, but is not a major stream.

(2) The proposed culvert or bridge replacement shall have the following:

(A) A cross-sectional area at least equivalent to that of the original bridge or culvert for water to flow over, through or around; and

(B) a road grade across the floodplain and approaching the bridge or culvert that is not raised by more than an average of one foot. The average rise of the road grade shall be calculated by measuring the difference between the proposed grade and the existing grade at the beginning and end of each interval of 100 or fewer feet, dividing the sum of the two differences by two and multiplying the mean by the number of feet in the interval. The sum of these calculations from each interval shall then be added together and the total sum divided by the length, in feet, of the road alteration. The average road grade shall not increase by a cumulative amount of more than one foot since April 11, 1978.

(3) A vegetative strip measuring 50 feet from the bank and outward on each side of a channel change shall be maintained in a manner consistent with the existing riparian vegetation and other design criteria.

(4) The project shall not alter the channel's cross-sectional area by more than 15 percent, nor shall it alter the channel length by more than 10 percent.

(d) If any bridge or culvert replacement project does not meet the requirements of this regulation, the applicant may apply for a nongeneral permit pursuant to K.S.A. 82a-301 et seq., and amendment thereto, before construction.

(e) If any bridge or culvert replacement project does not meet the requirements of this regulation or the chief engineer determines that the project may have an unreasonable effect on the public interest, public safety, or environmental interests, the right to perform the following shall be reserved by the chief engineer:

(1) Require a general permit meeting the requirements of this regulation or a nongeneral permit meeting the requirements of K.S.A. 82a-301 et seq., and amendment thereto, before construction; and

(2) amend, modify, or revoke the prior general permit or consent issued in accordance with this regulation. (Authorized by K.S.A. 82a-303a; implementing K.S.A. 82a-303; effective Sept. 22, 2000.)

K.A.R. 5-46-3. General permits; sand and gravel removal operations.

(a) Before the commencement or continuation of any sand or gravel removal from a site with a drainage area of 50 or more square miles above the site, the removal operation shall meet the criteria in subsection (c) of this regulation. Before the removal of any sand and gravel, the owner shall apply for and obtain a general permit from the chief engineer. The application shall be filed on a form prescribed by the chief engineer and shall be accompanied by plans meeting the requirements of K.A.R. 5-42-2.

(b) If the proposed sand or gravel removal operation meets the criteria set forth in subsection (c) of this regulation and there are fewer than 50 square miles of drainage area above the proposed sand or gravel removal site, a permit shall not be required unless the chief engineer determines that a permit is necessary to protect the public interest, public safety, or environmental interests.

(c) All sand and gravel operations covered by this regulation shall meet the following criteria:

(1) The sand and gravel removal operation shall be limited to removing a maximum of 100 cubic yards per year from each sand and gravel removal site. Other than bridge maintenance sites, all sand and gravel removal operations on the same stream and its tributaries shall be separated by at least 1,320 feet.

(2) A sand and gravel removal operation shall not be located within the following distances of a bridge, pipeline, cable crossing, levee, or other feature, except when the written permission or easement of the owner of the bridge, pipeline, cable crossing, levee, or other feature is obtained by the applicant, and a written waiver is granted by the chief engineer:

(A) 50 feet of the banks, or in the channels of the Missouri, Kansas, or Arkansas rivers, and 50 feet of the banks, or in the channels of their tributaries, for ½ mile upstream from the mouth of the tributaries;

(B) one mile of a public water supply intake;

(C) 500 feet of a bridge;

(D) 300 feet of a buried pipeline or cable crossing; and

(E) 200 feet of a levee or other feature subject to damage.

(3) Stockpiles of material shall be located in a manner that does not affect the flow of water on the property of any other landowner.

(d) If any sand or gravel removal operation covered by this regulation does not meet the requirements of this regulation, or if the chief engineer determines that the operation may have an unreasonable effect on the public interest, public safety, or environmental interests, the right to perform the following shall be reserved by the chief engineer:

(1) Require a nongeneral permit pursuant to K.S.A. 82a-301 et seq., and amendments thereto;

(2) amend, modify, or revoke the general permit issued in accordance with this regulation. (Authorized by K.S.A. 82a-303a; implementing K.S.A. 82a-303; effective Sept. 22, 2000.)

K.A.R. 5-46-4. General permits; pipeline crossings.

(a) Before the construction of any pipeline or buried cable crossing of a stream having 50 or more square miles of drainage area above the proposed project site, the project shall meet the requirements of subsection (c) of this regulation. Before construction, the owner shall apply for and obtain a general permit from the chief engineer. The application shall be filed on a form prescribed by the chief engineer.

(b) Any pipeline or buried cable crossings of streams that have fewer than 50 square miles of drainage area above the proposed project site and that meet the requirements of subsection (c) of this regulation shall not be required to have a permit pursuant to K.S.A. 82a-301 et seq., and amendments thereto.

(c) All pipeline or buried cable crossings covered by this regulation shall meet the following requirements:

(1) Underground pipelines and cables shall be buried at a depth below the stream bed sufficient to prevent exposure. For navigable streams, underground pipelines and cables shall be buried at a minimum depth of seven feet beneath the stream bed. For all other streams, underground pipelines and cables shall be buried at a minimum depth of five feet beneath the stream bed. Pipelines and cables shall be buried sufficiently into the banks to allow for a moderate amount of stream meander without exposure. The minimum depth may be waived if the owner or applicant demonstrates that the underground pipeline or cable is adequately protected against erosion.

(2) After installation, the channel and banks shall be restored to the natural elevations and configurations as nearly as possible. Armoring devices shall be installed when necessary to ensure bank stability. Surplus excavated material shall be disposed of in a manner that will not obstruct the channel or act as a levee.

(d) If any pipeline or buried cable crossing covered by this regulation does not meet the requirements of this regulation, or if the chief engineer determines that a pipeline or cable crossing may have an unreasonable effect on the public interest, public safety, or environmental interests, the right to perform the following shall be reserved by the chief engineer:

(1) Require a nongeneral permit pursuant to K.S.A. 82a-301 et seq., and amendments thereto; and

(2) amend, modify, or revoke the general permit issued in accordance with this regulation. (Authorized by K.S.A. 82a-303a; implementing K.S.A. 82a-303; effective Sept. 22, 2000.)